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ABSTRACT

The unit of individualized learning activities is designed to provide training in the job skill, lubrication, for the prospective auto mechanic service specialist. The materials in the unit are divided into two sections. The developmental, or preliminary phase, for use by the instructor, includes brief descriptions of the job and of the student population, and listings of the specific tasks, course prerequisites, and objectives. The curriculum phase, for use by the student, contains directions, objectives, activities, worksheets, pretests, and posttests. These two components together form a "job entry", a unit of work which, when completed by the student, insures his training in a designated job skill. Suggestions are included to aid the instructor in his role as guide in the individualized instruction format. (NJ)

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TO THE INSTRUCTOR

THE JOB ENTRY PACKAGE

The materials in this package have been developed in two listinct sections -- the developmental phase which looks closely at the job and the student, and the curriculum phase designed for actual student use (Learning Activity Packages). These two components together form a "Job Entry" -- a unit of work which, when completed by the student, insures his training in a designated job skill.

COMPONENTS OF THE JOB ENTRY PACKAGE

I. Developmental or Preliminary Phase - (blue sheets) placed at the beginning of the Job Entry for use by the instructor.

Includes the following components:

A. Description of Student Population: designed to describe the type of student for whom the curriculum was developed.

B. Job Description: a brief description of the job. This forms the basis for developing the job entry curriculum. (Course Description is used in "Introduction" packs.)

C. Task Listing Sheet: a breakdown of the job into specific tasks. (Not included in "Introduction" packs.)

D. Task Detailing Sheets: placed before each learning activity package to indicate steps in performing specific vocational tasks being dealt with in package; includes the type of performance of each task (manipulation, discrimination, recall, etc.) and the learning difficulty of each. (Not included in "Introduction" packs.) Vocational instructional objectives are fashioned from these details.

E. Job Prerequisites: listing of standards student must meet before gaining entrarce to a specific job entry study.

F. Prerequisite Test: checklist to be used by the instructor to determine if student meets stated prerequisites. Includes suggested types of tests to be used.

G. Job Objectives: a composite list of all vocational and related academic objectives which must be met by student in order to be certified in a particular job entry. Individual LAP packages are fashioned from these objectives.

II. Curriculum Phase - (white sheets) for use by students. One LAP package is developed to correspond with each task detailing sheet. The LAP package includes both vocational materials and fused, related academic material in a variety of disciplines.

Includes the following components:

A. directions.

B. goal of package: states package's broad objective and includes statement of minimum acceptable performance.

C. specific objectives: states the expected behavior changes in the student.

D. activities: those specific things the student must do to accomplish stated specific objectives.

E. study and work sheets: included within package for particular activities.

F. Pretest: a test instrument to be administered before giving students package; this is used to determine if the students need to cover material within package. If student proves his competency, he may take post test and, if results are satisfactory, proceed to the next LAP.

G. Post Test: a test instrument to be administered upon completion of learning activity package. If student completes successfully, he may continue to next LAP within job entry.

H. Evaluation sheet: a checklist used by the instructor to record student progress.

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Bibliography: a composite list of all reference material used within LAPs.

SUGGESTIONS FOR IMPLEMENTATION OF LEARNING ACTIVITY PACKAGES

Using individualized instruction, (LAPs), requires some changes in classroom methods. Since individualizing instruction allows the

student to move at his own pace according to his particular abilities, it allows him to gain self-reliance; it also necessitates that the instructor assume the additional role of manager and director.

Individualized instruction prods the student to plot his own course, while the instructor acts as a guide to insure that course is a fruitful one.

The following suggestions are designed to aid the instructor in his new role as classroom manager and director.

1. For activities involving discussions, films, speakers, field trips or demonstrations by instructor, group participation is often necessary. In such cases the instructor should simply stop individual work on LAPs and proceed with group activities. If necessary, students may be briefly refreshed at the appropriate time on content of demonstration, film, etc., either by teacher, fellow student or printed outline of material covered.

   If available, a resource center containing films, tapes, etc., could also be utilized to allow the student who has missed a group film showing, etc., to "catch up" individually.

2. Teachers often find themselves swamped with students clamoring to have activities checked, evaluation sheets signed, etc.

   A good method for avoiding this is to design a "Key" for each LAP (or at least for those activities where a "Key" method would be plausible), allow the student to grade his own LAPs and, if desired, complete his own evaluation sheet.

   This method has the advantage of allowing the student to see why he has "missed" a particular question. Seeing the correct answer will force him to re-evaluate his thinking and, thus, enhance the learning process. If he does not understand a particular answer, he has this opportunity to discuss it with the instructor and correct his thinking before taking the post test.

   Secondly, by completing his own evaluation sheet, the student gains a sense of accomplishment as each activity is checked off and he evaluates his progress and recognizes any weak areas.

   Of course, there is the problem of the dishonest student who copies the "Key." The solution to this problem is to design a post test which is comprehensive enough to cover all material within a package. This post test is then graded by the instructor. At this time, the student who has cheated in his package completion will be exposed and can be instructed to redo the package's activities. This procedure shifts the responsibility

for proper completion of LAPs to the shoulders of the student, eliminating irritating and unnecessary prodding by the instructor.

HINT: It is a good idea to establish a permanent area for use of the "Key" to avoid its being misplaced.

3. One classroom procedure which avoids a great deal of confusion and use of teacher time is the development of a good filing system.

   It is a good idea to use a filing cabinet (boxes will do) to hold all LAPs, Keys, Supplemental Material, etc., to be utilized by students. Label these clearly to allow the students to get materials as they are needed. This will eliminate the necessity of interrupting the teacher each time a resource is needed.

   HINT: If desired, students can be required to sign for materials on a sign out sheet.

4. A file folder should be maintained for each student; evaluation checklists, indicating successful completion or stated objectives, should be faithfully filed in this folder. Pretests and post tests may also be included as a part of the student's file.

5. A record should be made charting student progress in the completion of LAPs. The following example might be employed:

		LAP #1	LAP #2	LAP #3
Student's Name	Date Completed			
	P.T. grade:			
	COMMENTS:			
" " "	" "			
" " "	" "			

6. Students often learn best by working in teams; pair or group students and allow them to work together whenever practical. Let brighter students help slower ones.

If a student reaches an activity which requires a partner (role playing, etc.), ask if any other students in the class are about ready for the particular activity -- if so, let those students work together. If a student appears to be either far ahead or far behind in his activities, it may be necessary for the instructor to be the "partner."

7. It might be helpful to post a printed list of class procedures and include the locations of various materials incorporated in LAPs.

8. If a few students are moving ahead of the class, you may wish to design supplemental packages which go into greater depth on the subject being studied, or include "enrichment" activities within regular packages to be done by those who have exceptional capabilities.

9. Where the team approach is utilized and the student uses the same package in a number of classes, it is often wise for the teacher or teacher's aide to collect and distribute packages to avoid loss.

10. It is also suggested that the instructor maintain a master copy of all materials used indicating necessary changes for purposes of future revision.

Though it does involve some changes in methods and philosophy, the individualized LAP approach has many advantages and great potential for meeting the needs of all learners. Through implementation of the above suggestions, and additional ideas of your own, you will find it a rewarding and exciting teaching experience.

AUTO MECHANICS

DESCRIPTION OF STUDENT POPULATION

Physical Characteristics - - - - - - -	Male 15-20 years old, very good stamina, healthy and physically strong. Good manipulation ability.
Education - - - - - - - - - - - - - - -	A few are potential high school dropouts, generally below average reading level. Have knowledge of simple mechanics. Below grade level in math. Generally lacking in basic academic and study skills.
Motivation - - - - - - - - - - - - - - -	Desirous of obtaining skills in auto mechanics. Most desire on the job training.
Interest - - - - - - - - - - - - - - - -	Enjoy working with hands. Show some interest in attending school. Show little interest in academic subjects, but express a high degree of satisfaction when success is obtained.
Attitudes, Biases and Prejudices - -	Many from average and below average enviornments, broken and disturbed homes. Unaccustomed to following instructions.

AUTO MECHANICS

JOB DESCRIPTION

JOB ENTRY - AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

The auto mechanic service specialist (lubrication) changes oil, and oil filters, lubricates the steering system and checks power train components and related maintenance items as needed.

AUTO MECHANICS

TASK LISTING SHEET

JOB ENTRY - AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

NO.	TASK	FREQUENCY OF PERFORMANCE	IMPORTANCE	LEARNING DIFFICULTY
1	Changes engine oil and filter	Daily	1	Easy
2	Lubricates steering system	Daily	2	Easy
3	Checks power train components and other maintenance items	Daily	2	Moderate

AUTO MECHANICS

JOB PREREQUISITES

JOB ENTRY - AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

1. Student must have good physical stamina.
2. Student must have functional eyesight.
3. Student must possess above average manual dexterity.
4. Student should realize that he must read trade journals and attend automotive clinics to stay abreast with technological changes.
5. Student must read at a 5th grade level.
6. Student must be able to perform the four basic mathematical operations.
7. The student must enjoy working under varying temperatures.
8. The student must be able to identify and safely use basic hand tools.
9. The student must be able to correctly use reference materials.
10. The student must have completed the LAP on "safety" satisfactorily.

AUTO MECHANICS

PREREQUISITE TEST

JOB ENTRY - AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

	YES	NO
1. The student does have good physical stamina. Teacher observation.	____	____
2. The student does have functional eyesight. Teacher observation or vision test.	____	____
3. The student does possess above average manual dexterity. G.A.T.B. Test, Part M. Score_____	____	____
4. The student does realize he must read trade journals, and attend automobile clinics in order to stay abreast with technological changes. Student-teacher conference.	____	____
5. The student does read at a 5th grade level. R.F.U. Reading Test. Score_____ Reading Level_____	____	____
6. The student can perform the four basic mathematical operations. W.R.A.T. or L.S.I. Math Test. Score_____ Grade Level_____	____	____
7. The student does enjoy working under varying temperatures. Student-teacher conference.	____	____
8. The student can identify and safely use basic hand tools. Demonstration to teacher and teacher administered test. Minimum acceptable score 80%.	____	____
9. The student can correctly use reference materials. Teacher observation.	____	____
10. The student has successfully completed the LAP on "Shop Safety."	____	____

AUTO MECHANICS

JOB OBJECTIVES

JOB ENTRY - AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

1. To develop in the auto mechanics student the skills necessary to change engine oil and oil filters as evidenced by his ability to successfully complete the following with 95% accuracy:

   a. identify four motor oil classifications.

   b. remove and replace the power plant crankcase oil in accordance with the manufacturer's specifications.

   c. remove and replace the power plant oil filter in accordance with the manufacturer's specifications.

2. To develop in the auto mechanics student the skills necessary to lubricate the steering system as evidenced by his ability to successfully complete the following with 80% accuracy:

   a. identify five automobile lubricants.

   b. lubricate the steering and suspension system components with lubrication fittings in accordance with manufacturer's specifications.

3. To develop in the auto mechanics student the skills necessary to check the power train components and other maintenance items as evidenced by his ability to successfully complete the following with 80% accuracy:

   a. check the lubricant level in the standard transmission and indicate if it is over full, full or low.

   b. check and/or fill the automatic transmission fluid level to the specifications set by the manufacturer.

   c. check the lubricant level in the differential and indicate if it is over full, full or low.

   d. check the following maintenance items

      1. battery water level.
      2. radiator coolant level.
      3. master cylinder brake fluid level.
      4. power steering fluid level.
      5. P.C.V. valve.
      6. air filter.
      7. fan belt.
      8. radiator hose.

AUTO MECHANICS

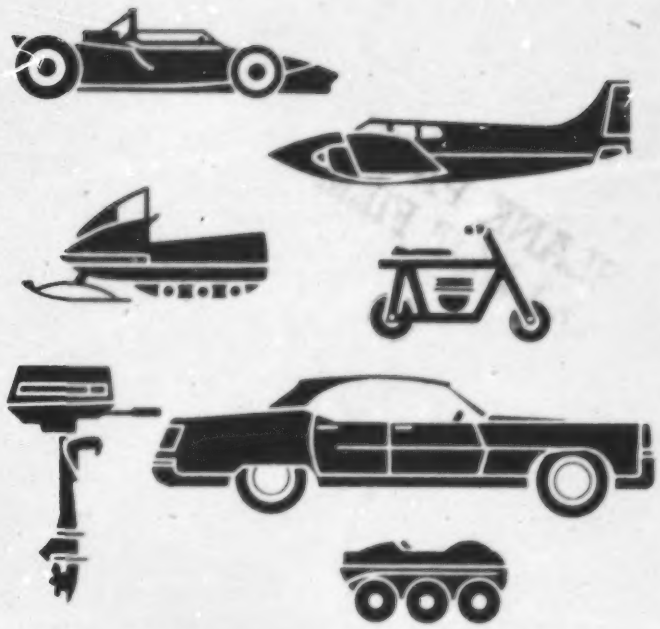
TASK DETAILING SHEET

JOB ENTRY - AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

TASK: CHANGES ENGINE OIL AND FILTER

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Distinguishes between motor oil classifications	Discrimination	Easy
2	Removes and replaces power plant crankcase oil	Manipulation	Easy
3	Removes and replaces power plant oil filter	Manipulation	Easy

ENGINE OIL AND FILTER CHANGE



AUTO MECHANIC SERVICE SPECIALIST
(LUBRICATION)

NAME _____

LAP #1

ENGINE OIL AND FILTER CHANGE

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

   A score of 95% is needed on the auto mechanics post test as evidence for successful completion of this package.

II. Goal: To develop in the auto mechanics student the skills necessary to change engine oil and oil filter.

III. Specific Objectives

The student will

1. identify four motor oil classifications.

2. remove and replace the power plant crankcase oil in accordance with the manufacturer's specifications.

3. remove and replace the power plant oil filter in accordance with the manufacturer's specification.

IV. Activities, Materials and Resources

1. View the Allen slides on "Lubrication," and complete the worksheet on page 4 of this package.

2. Read Chapter 5, page 93 in Auto Mechanics Fundamentals. Complete the quiz on page 113, questions 1-32.

3. Study pages 5-7 of this package on oil classification and applications, then complete the following.

   Below are four (4) motor oil classifications from the American Petroleum Institute and their letter codes. Place the letter in front of the correct motor oil classification.

   LETTER CODE: SE SC SB SD

   ____ For Minimum Duty Gasoline Engine Service.
   Service typical of engines operated under such mild conditions that only minimum protection is desired.

   ____ For 1964 Gasoline Engine Warranty Service.
   Service typical of gasoline engines in 1964 through 1967 models of passenger cars and trucks operating under engine manufacturer's warranties in effect during those model years.

   ____ For 1968 Gasoline Engine Warranty Service.
   Service typical of gasoline engines in passenger cars and trucks beginning with 1968 models and operating under engine manufacturer's warranties.

   ____ For 1972 Gasoline Engine Warranty Service.
   Service typical of gasoline engines in passenger cars and some trucks beginning with 1972 and certain 1971 models operating under engine manufacturer's warranties.

4. See instructor for shop manual and instruction on what lab engine to change oil.

   Remove and replace the crankcase oil in this automobile in accordance with the manufacturer's specifications. Fill the crankcase to the maximum capacity level. Time limit is thirty (30) minutes. Satisfactory performance will be to fill crankcase oil level to no more than one-eighth (1/8) quart over full and no less than one-fourth (1/4) quart below full.

IV. Activities cont.

5. Measure the crankcase oil level on power plant specified by instructor, using the oil dip stick gauge. Record your measurement to the nearest one-eighth (1/8) of a quart level.

Crankcase Oil Level is: Down _____ quarts.

or

Overful by _____ quarts.

6. Given an automobile with an oil filter in the power plant lubricating system, access to the appropriate service manuals, tools and equipment, remove and replace the power plant oil filter in accordance with the manufacturer's specifications. Time limit is fifteen (15) minutes. Satisfactory performance will be to run the power plant for one (1) minute with no visible leaks in the filter and for the student to follow all steps in the following performance outline.

Performance Outline:

a. Place drain pan under filter.
b. Remove filter.
c. Clean mounting surface or housing.
d. Lubricate new gasket.
e. Replace filter and new gasket.
f. Start power plant.
g. Check for oil pressure and leaks.
h. Stop power plant.
i. Check oil level (if low, add oil and recheck).

ENGINE OIL AND FILTER CHANGE

Worksheet for Activity #1:

The sentences below are incomplete. After each sentence are several words or phrases, only one of which will correctly complete the sentence. Select the proper word or phrase to complete the sentence. Put the letter of the correct word or phrase on the line beside the number.

_____ 1. Water sludge forms in the crankcase from the mixing of

a. water anf fuel.
b. water and oil.
c. water and air.

_____ 2. Water sludge is most likely to form during

a. cold weather.
b. warm weather.
c. changeable weather.

_____ 3. The type of car service that is most apt to result in the formation of water sludge is

a. short trip operation.
b. long trip operation.
c. trips longer than 14 miles.

_____ 4. A typical recommendation for a late-model car operating under favorable conditions is that the oil be changed every

a. 1,000 miles.
b. 2,000 miles.
c. 4,000 miles.

ENGINE OIL AND FILTER CHANGE

Study Sheet for Activity #3:

FLEET SERVICE NEWS LETTER

IH SERVICE

Latest Improvement and Techniques For ALL Servicemen

Date: February 18, 1971
Number: SLF71-11
Subject File: LUBRICATION

TO ALL FLEET OPERATORS:

New Engine Oil (Motor Oil) Classifications.

The American Petroleum Institute (API) in cooperation with the Society of Automotive Engineers (SAE) and the American Society for Testing and Materials (ASTM) has revised the classification of engine or motor oils using eight new designations to replace the previously used ML, MM, MS, DG, DM and DS service designations. Major oil companies are in the process of changing oil containers to show the new designations.

The new API oil designations are as follows:

GASOLINE ENGINES

Service SA: Service typical of engines operated under such mild conditions that the protection afforded by compounded motor oils is not required. This classification has no performance requirements.

Service SB: Service typical of engines operated under such mild conditions that only minimum protection afforded by compounding is desired. Oils designed for this service have been used since the 1930's and provide only antiscuff capability and resistance to oil oxidation and bearing corrosion.

Service SC: Service typical of gasoline engines in 1964 through 1967 models of passenger cars and trucks operating under engine manufacturers' warranties in effect during those model years. Oils designed for this service provide for control of high and low temperature deposits, wear, rust and corrosion in gasoline engines.

Service SD: Service typical of gasoline engines in passenger cars and trucks beginning with 1968 models and operating under engine manufacturers' warranties. Oils designed for this service provide more protection from high and low temperature deposits, wear, rust, and corrosion in gasoline engines than oils for API Service Classification SC and may be used when API Service SC are recommended. (Service SD oils meet or exceed the requirements of the former API Service MS.)

Study Sheet for Activity #3 cont.:

How to read an oil can

You can help yourself if you're familiar with the various identifications on the oil can.

If you own a new or fairly new car, you want to keep your warranty in effect. Which means you must use a motor oil that meets the manufacturer's specifications. Every oil that does qualify says so clearly on the can. Before you buy, look for a statement like this on the can: "Meets (or exceeds) all manufacturers' requirements for new car warranties." Every good oil is proud to say it.

Your car's maker also expects you to use an oil that meets certain operational service standards. These are designated by the letters SC,SD or SE*. In each case, the S indicates an oil for passenger cars and light trucks. The second letter qualifies the use more specifically. For example:

SC: Service typical of gasoline engines in 1964 through 1967 models of passenger cars and trucks operating under engine manufacturers' warranties in effect during those model years. Oils designed for this service provide control of high and low temperature deposits, wear, rust and corrosion.

SD: Service typical of gasoline engines in 1968 through all 1970 and certain 1971 models of cars and also some trucks

Study Sheet for Activity #3 cont.:

operating under engine manufacturers' warranties. Oils designed for this service provide more protection from high and low temperature engine deposits, wear, rust and corrosion than do SC oils.

SE: Service typical of gasoline engines in cars and some trucks beginning with 1972 and certain 1971 models operating under engine manufacturers' warranties. Oils designed for this service provide more protection against oil oxidation, high temperature engine deposits, rust and corrosion than do oils which are satisfactory for API Engine Service Classifications SD or SC and may be used when either classification is recommended.

All car manufacturers recommend that you use a high detergent motor oil. So HD may be on the can, too. It stands for "High Detergency" as well as "Heavy Duty."

The top of the cans usually have letters and numbers that look like this: "SAE 30." SAE stands for Society of Automotive Engineers, and tells you that oil conforms to the SAE's oil weight or viscosity. The lower the number, the thinner the oil. Use low numbers in cold weather, higher numbers for warm climates.

You can buy oils in a single grade for warm or cold weather driving. Or, as most people prefer, in multigrades that will suit your car all year long, provided you change the oil at normal intervals. Multigraded oils are also especially formulated to minimize formation of combustion chamber deposits, which are most common in city driving. With that in mind, here are the viscosity numbers—and when they should be used.

SAE 5W: For use only in extreme winter climates where temperatures far below zero are common. (Not recommended for high-speed driving.)

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

ENGINE OIL AND FILTER CHANGE

LAP #1

PRETEST NAME_____

1. Complete the following for the instructor.

   a. Below are four (4) motor oil classifications from the American Petroleum Institute and their letter codes. Place the letter in front of the correct motor oil classification.

      LETTER CODE: SE SC SB SD

      ____ For Minimum Duty Gasoline Engine Service.
      Service typical of engines operated under such mild conditions that only minimum protection is desired.

      ____ For 1964 Gasoline Engine Warranty Service.
      Service typical of gasoline engines in 1964 through 1967 models of passenger cars and trucks operating under engine manufacturer's warranties in effect during those model years.

      ____ For 1968 Gasoline Engine Warranty Service.
      Service typical of gasoline engines in passenger cars and trucks beginning with 1968 models and operating under engine manufacturer's warranties.

      ____ For 1972 Gasoline Engine Warranty Service.
      Service typical of gasoline engines in passenger cars and some trucks beginning with 1972 and certain 1971 models operating under engine manufacturer's warranties.

   b. Drain engine oil.

   c. How many miles should the engine be run between oil filter changes?

      _____

   d. Determine the type of filter needed in an instructor designated engine.

   e. Change an oil filter.

   f. Refill an engine with proper type and amount of oil, with or without filter.

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

ENGINE OIL AND FILTER CHANGE

LAP #1

POST TEST: VOCATIONAL NAME_____

1. Below are four (4) motor oil classifications from the American Petroleum Institute and their letter codes. Place the letter code in front of the correct motor oil classification.

LETTER CODE: SE SC SB SD

_____ For Minimum Duty Gasoline Engine Service. Service typical of engines operated under such mild conditions that only minimum protection is desired.

_____ For 1964 Gasoline Engine Warranty Service. Service typical of gasoline engines in 1964 through 1967 models of passenger cars and trucks operating under engine manufacturer's warranties in effect during these model years.

_____ For 1968 Gasoline Engine Warranty Service. Service typical of gasoline engines in passenger cars and trucks beginning with 1968 models and operating under engine manufacturer's warranties.

_____ For 1972 Gasoline Engine Warranty Service. Service typical of gasoline engines in passenger cars and some trucks beginning with 1972 and certain 1971 models operating under engine manufacturer's warranties.

2. Many manufacturers give recommendations of _____ to _____ miles between oil changes.

3. Remove and replace the crankcase oil in a teacher designated automobile in accordance with the manufacturer's specifications. Fill the crankcase to the maximum capacity level.

4. Measure the crankcase oil on a teacher specified power plant, using the oil dip stick gauge. Record your measurement to the nearest one-eighth (1/8) of a quart level.

Crankcase Oil Level is: Down _____ quarts.

or

Overfull by _____ quarts.

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

ENGINE OIL AND FILTER CHANGE

LAP #1

POST TEST: VOCATIONAL cont. NAME _____

5. Remove and replace the power plant oil filter on a teacher specified car in accordance with the manufacturer's specifications.

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AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

ENGINE OIL AND FILTER CHANGE

LAP #1

EVALUATION NAME _____

The student can	Date Completed	Initial
1. identify four motor oil classifications.	_____	_____
2. remove and replace the power plant crankcase oil in accordance with the manufacturer's specifications.	_____	_____
3. remove and replace the power plant oil filter in accordance with the manufacturer's specifications.	_____	_____

AUTO MECHANICS

TASK DETAILING SHEET

JOB ENTRY - AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

TASK: LUBRICATES STEERING SYSTEM

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Determines type of lubrication to use on steering systems	Discrimination	Easy
2	Lubricates steering and suspension system components	Manipulation	Easy

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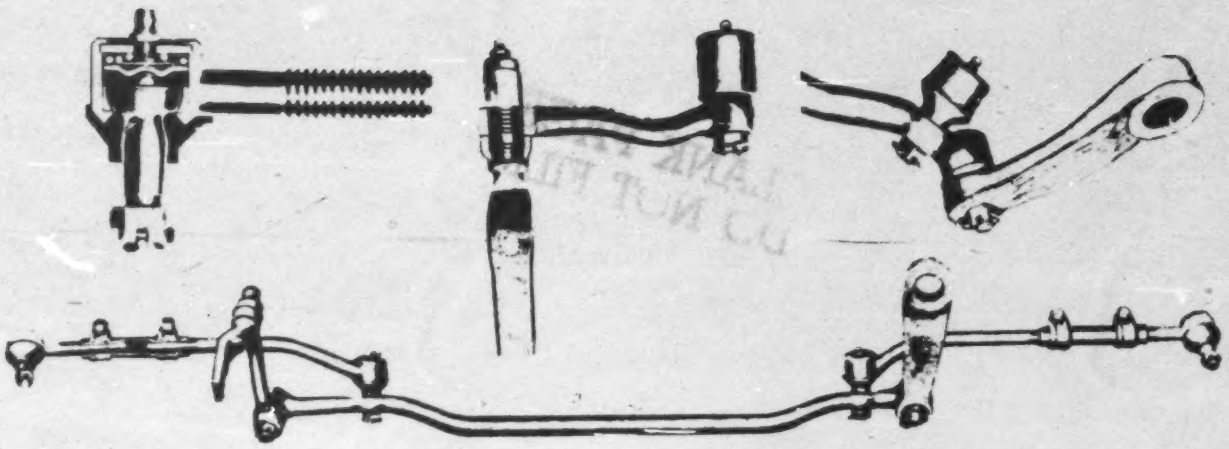
LUBRICATE STEERING SYSTEM



AUTO MECHANIC SERVICE SPECIALIST
(LUBRICATION)

NAME_____

LAP #2

LUBRICATE STEERING SYSTEM

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

   A score of 80% is needed on the auto mechanics post test as evidence for successful completion of this package.

II. Goal: To develop in the auto mechanics student the skills necessary to lubricate the steering system.

III. Specific Objectives

The student will

1. identify 5 automobile lubricants.

2. lubricate the steering and suspension system components of a teacher specified automobile with lubrication fittings in accordance with the manufacturer's specifications.

LUBRICATE STEERING SYSTEM

IV. Activities, Materials and Resources

1. See the instructor for a demonstration on different lubricants.

2. Obtain from the instructor five different lubricants and then place the number of these lubricant samples in front of the correct lubricant on the following list.

   _____ SAE 30 W motor oil

   _____ SAE 40 W motor oil

   _____ Automatic transmission fluid type A

   _____ Chassis grease

   _____ SAE 90 W gear lube

   _____ Graphite

   _____ Hydraulic brake fluid

3. Read the paragraph on "Lubrication," page 291 in Auto Mechanic Fundamentals and complete questions 33 and 34 on page 295.

4. Obtain from the instructor an automobile with a known number of lubrication fitting on steering and suspension system components, service manuals, lubricants, tools and equipment. Lubricate the steering and suspension system components with lubrication fittings in accordance with the manufacturer's specifications.

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

LUBRICATE STEERING SYSTEM

LAP #2

PRETEST NAME_____

1. Obtain from the instructor the lubricant samples and then place the number of these lubricant samples in front of the correct lubricant on the following list.

   _____ SAE 30 W motor oil

   _____ SAE 40 W motor oil

   _____ Automatic transmission fluid type A

   _____ Chassis grease

   _____ SAE 90 W gear lube

   _____ Graphite

   _____ Hydraulic brake fluid

2. Lubricate a teacher specified automobile suspension system in accordance with manufacturer's specifications.

3. Some of the new types of suspension joints can forego greasing for periods up to 30,000 miles. TRUE or FALSE?

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

LUBRICATE STEERING SYSTEM

LAP #2

POST TEST: VOCATIONAL NAME_____

1. Obtain from the instructor the lubricant samples and then place the number of these lubricant samples in front of the correct lubricant on the following list.

   _____ SAE 30 W motor oil

   _____ SAE 40 W motor oil

   _____ Automatic transmission fluid type A

   _____ Chassis grease

   _____ SAE 90 W gear lube

   _____ Graphite

   _____ Hydraulic brake fluid

2. Lubricate a teacher specified automobile suspension system in accordance with manufacturer's specifications.

3. Some of the new type of suspension joints can forego greasing for periods up to _____ miles.

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

LUBRICATE STEERING SYSTEM

LAP #2

EVALUATION

NAME_____

The student can	Date Completed	Initial
1. identify five automobile lubricants.	_____	_____
2. lubricate the steering and suspension system components of a teacher specified automobile with lubrication fittings in accordance with the manufacturer's specifications.	_____	_____

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AUTO MECHANICS

TASK DETAILING SHEET

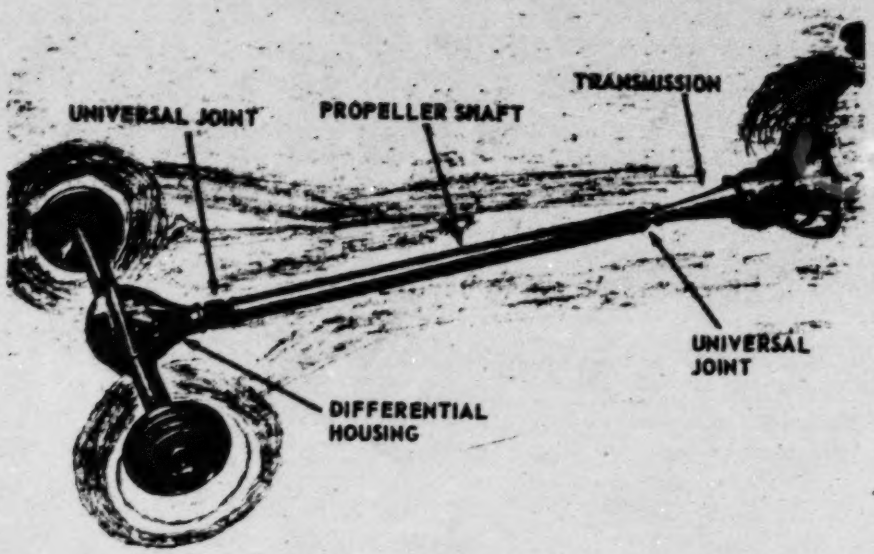
JOB ENTRY - AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

TASK: CHECKS POWER TRAIN COMPONENTS AND OTHER MAINTENANCE ITEMS

NO.	STEPS IN PERFORMING TASK	TYPE OF PERFORMANCE	LEARNING DIFFICULTY
1	Checks standard transmission lubricant level	Manipulation Discrimination	Moderate
2	Checks automatic transmission lubricant level	Manipulation Discrimination	Moderate
3	Checks differential lubricant level	Manipulation Discrimination	Moderate
4	Checks the following:		
	a. battery water level	Discrimination Manipulation	Easy
	b. radiator coolant level		
	c. master cylinder brake fluid level		
	d. power steering fluid level		
	e. P.C.V. valve.		
	f. air filter		
	g. fan belt		
	h. radiator hose		

POWER TRAIN COMPONENTS AND OTHER MAINTENANCE ITEMS

Drive Lines



AUTO MECHANIC SERVICE SPECIALIST
(LUBRICATION)

NAME_____

LAP #3

POWER TRAIN COMPONENTS AND OTHER MAINTENANCE ITEMS

I. Directions

1. Read the entire package carefully. If you need help, see the instructor.

2. See instructor for pretest.

3. Complete the learning activities.

4. Complete the post test.

   A score of 80% is needed on the auto mechanics post test as evidence for successful completion of this package.

II. Goal: To develop in the auto mechanics student the skills necessary to check the power train components and other maintenance items.

III. Specific Objectives

The student will

1. check the lubricant level in the standard transmission of a teacher specified automobile and indicate if it is full, over full or low.

2. check and/or fill the automatic transmission fluid level in a teacher specified automobile to the specifications set by the manufacturer.

3. check the lubricant level in the differential of a teacher specified automobile and indicate if it over full, full or low.

4. check the following maintenance items on a teacher specified automobile:

   a. battery water level.

   b. radiator coolant level.

   c. master cylinder brake fluid level.

   d. power steering fluid level.

   e. P.C.V. valve.

   f. air filter.

   g. fan belt.

   h. radiator hose.

IV. Activities, Materials and Resources

1. Use the shop motor manual for specifications for the car you are working on.

2. Obtain from the instructor an automobile with a manual transmission and a recorded transmission lubricant level, appropriate service manuals, tools and equipment. Check the lubricant level in the transmission and indicate if it is over full, full or low.

3. Obtain from the instructor an automobile with an automatic transmission with a known transmission fluid level, appropriate service manuals, tools, fluid and equipment. Check and/or fill the transmission fluid level to the specifications set by the manufacturer.

4. Obtain from the instructor an automobile with a known differential lubricant level, the appropriate service manuals, tools and equipment. Check the lubricant level in the differential and indicate if it is over full, full or low.

5. Using the motor manual, write the capacity of each of the power train components and the type of lubricant used in that component for a teacher specified automobile.

6. See instructor for demonstration on checking related maintenance items and complete the worksheet on page 3 of this package.

POWER TRAIN COMPONENTS AND OTHER MAINTENANCE ITEMS

Worksheet for Activity #6:

1. With this list, check one teacher specified lab engine and record condition.

	O.K.	NEEDS SERVICE
a. battery water level	_____	_____
b. radiator coolant level	_____	_____
c. master brake cylinder	_____	_____
d. power steering fluid level	_____	_____
e. P.C.V. valve	_____	_____
f. air filter	_____	_____
g. fan belt	_____	_____
h. radiator hose	_____	_____

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

POWER TRAIN COMPONENTS AND OTHER MAINTENANCE ITEMS

LAP #3

PRETEST NAME_____

DIRECTIONS: Fill in the blanks.

1. The lubricant _____ is used in the standard transmission of most cars.

2. The lubricant _____ is used in an automatic transmission.

3. The lubricant _____ is used in the differential.

4. On a teacher specified automobile, check the manual transmission level and place an X in front of the correct level below.

   Lubricant Level is: _____ Over full

   _____ Full

   _____ Low

5. Check the differential lubricant level on a given automobile and place an X in front of the correct level below.

   Lubricant Level is: _____ Over Full

   _____ Full

   _____ Low

6. Check the automatic transmission lubricant level on a given automobile and place an X in front of the correct level below.

   Lubricant Level is: _____ Over Full

   _____ Full

   _____ Low

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

POWER TRAIN COMPONENTS AND OTHER MAINTENANCE ITEMS

LAP #3

PRETEST cont. NAME_____

7. Match the words with the unit that they are use in or with. Put the letter in the space provided.

a. water	____ power steering
b. brake fluid	____ battery
c. coolant	____ radiator
d. type A oil	____ master cylinder

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

POWER TRAIN COMPONENTS AND OTHER MAINTENANCE ITEMS

LAP #3

POST TEST: VOCATIONAL NAME_____

1. List the eight related maintenance items that should be checked or serviced when an automobile is lubricated and the oil is changed.

   a._____ e._____

   b._____ f._____

   c._____ g._____

   d._____ h._____

2. List the lubricants that are used in each of the following power train components.

   a. manual transmission _____

   b. automatic transmission _____

   c. differential transmission _____

3. On an automobile designated by the instructor, check the differential lubricant level and place an X in front of the correct level below.

   Lubricant Level is: _____ Over Full

   _____ Full

   _____ Low

4. On an automobile designated by the instructor, check the automatic transmission fluid level in accordance with the manufacturer's specifications. If the fluid is low, fill it to the maximum level.

5. On an automobile designated by the instructor, check the manual transmission lubricant level and place an X in front of the correct level below.

   Lubricant Level is: _____ Over full

   _____ Full

   _____ Low

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

POWER TRAIN COMPONENTS AND OTHER MAINTENANCE ITEMS

LAP #3

EVALUATION NAME _____

The student can	Date Completed	Initial
1. check the lubricant level in the standard transmission of a teacher specified automobile and indicate if it is full, over full or low.	_____	_____
2. check and/or fill the automatic transmission fluid level in a teacher specified automobile to the specifications set by the manufacturer.	_____	_____
3. check the lubricant level in the differential of a teacher specified automobile and indicate if it is over full, full or low.	_____	_____
4. check the following maintenance items on a teacher specified automobile:		
a. battery water level.	_____	_____
b. radiator coolant level.	_____	_____
c. master cylinder brake fluid level.	_____	_____
d. power steering fluid level.	_____	_____
e. P.C.V. valve.	_____	_____
f. air filter.	_____	_____
g. fan belt.	_____	_____
h. radiator hose.	_____	_____

AUTO MECHANIC SERVICE SPECIALIST (LUBRICATION)

BIBLIOGRAPHY

A. Books

1. Stockel, Martin W., Auto Mechanic Fundamentals, Homewood, Illinois: Goodheart-Wilcox Company (1969).